QAA

Learning from ELIR 2003-07

The emerging impact of information and communication technologies (including virtual learning environments) on quality enhancement

Sharing good practice

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Preface

In 2003 Scotland adopted a new approach to managing quality and standards in higher education. The enhancement-led approach is now attracting significant international interest. Its key features include: a focus on improvement; important roles and responsibilities for students; and partnership working between Universities Scotland, the Quality Assurance Agency for Higher Education (QAA) Scotland, the National Union of Students in Scotland, the national independent student development service, student participation in quality Scotland (sparqs), the Higher Education Academy and the Scottish Funding Council.

In addition to Enhancement-led institutional review (ELIR), the Scottish Quality Enhancement Framework (QEF) comprises a rolling programme of national enhancement themes, institution-led review at the subject level, student engagement in quality management, including support provided through sparqs, and the inclusion of student reviewers as full members of institutional review teams.

Scottish higher education institutions have made significant progress in developing their approaches to the management of assurance and enhancement. Institutions' success is apparent in the published ELIR reports from the first cycle, 2003-07. Institutional systems continue to be judged rigorous and robust in assuring the quality of provision and the maintenance of academic standards. Individual institutions have taken the enhancement agenda forward according to their particular strategic priorities and mission, supported by a common sector-wide framework. With growing insight into the management of enhancement, institutions have made very effective structural, systemic and process changes designed to encourage a culture of critical reflection on learning and teaching, and the wider aspects of the student experience.

These various changes combine to create a synergy which reinforces and strengthens the drive for enhancement. The growing focus on the student experience has led institutions to foster wider student engagement in quality and enhancement processes, with external support for the training of student representatives being provided by sparqs. The recent (2007) independent external evaluation of the Scottish Quality Enhancement Framework stated that the QEF 'brought right to the fore the simple and powerful idea that the purpose of quality systems in higher education is to improve student experiences and, consequently, their learning' and concluded that 'the approach to quality that we review(ed) here is ambitious, distinctive and, so far, successful'.

QAA Scotland will commence the second cycle of ELIR this autumn, using a revised method which will build on these achievements in a number of ways: integrating ELIR more fully with other aspects of the QEF; sharpening the focus on the enhancement of the student learning experience through the three fundamental principles of quality culture, student engagement, and high quality learning; and drawing more on good practice, not only across the United Kingdom (UK), but internationally (including through the inclusion of an international member on future ELIR review teams).

Having excited considerable interest since its inception, both in the UK and internationally, the enhancement-led approach to managing quality in Scotland now finds resonance with approaches in a number of other countries, most notably Ireland, Finland, New Zealand and increasingly, in the United States of America. QAA Scotland will continue to develop these and other international links to inform the ongoing development of the enhancement-led approach in Scotland.

This report is one of a series of six reports addressing a range of topics relating to the enhancement-led approach in Scottish higher education over the last five years. It provides an overview of the impact of information and communication technologies, including virtual learning environments (VLEs), on quality enhancement, both from the institutional and the student perspective, and how this contributes to improving the student experience. To this end, it explores a number of different aspects, including the strategic challenges for institutions; management of integrated information systems; virtual learning environments and their impact on e-learning; risk assessment and the use of VLEs; applications of e-learning; personal development planning; online student feedback; learning environments and flexible spaces.

The companion reports address evolving approaches to the management of assurance and enhancement; institution-led quality review at the subject level; student engagement in quality assurance and enhancement; staff development, focusing on recognition, reward and the dissemination of good practice; and employability and personal development planning. An interim report on evolving approaches to the management of assurance and enhancement, based on the first 15 ELIR reports, was published in June 2007. These reports collectively provide evidence of the impact to date of the enhancement-led approach, to inform national and international debate and, more particularly, to support the ongoing development of the enhancement-led approach and the embedding of a quality culture across the Scottish higher education sector.

Background

The Scottish Government's Lifelong Learning Strategy recognises the need to develop a quality framework which is 'fit for purpose', and which puts learners' needs at the centre of educational systems.[1] The enhancement-led approach to quality in the Scottish higher education sector is consistent with this. For the purposes of ELIR, enhancement is defined as 'taking deliberate steps to bring about continuous improvement in the effectiveness of the learning experience of students'.

The Scottish higher education sector is small but diverse, containing within it a wide range of institutions of varying sizes and missions, cultures and organisational complexity, including three designated small specialist institutions. Across the sector, institutions have approached the enhancement agenda from a variety of starting points and perspectives. The ELIR method has the flexibility to address this diversity while systematically addressing key aspects of managing provision.

ELIR reports are structured around three main sections:

- internal monitoring and review of quality, standards and public information
- the student experience and
- the effectiveness of the institution's strategy for quality enhancement.

The factual evidence of the overviews is complemented by the more discursive commentaries which provide deeper insight into the effectiveness of the various systems, processes and strategies, and the way in which they interact to support quality assurance and quality enhancement.

This analysis of the impact on quality enhancement of information and communication technologies (including VLEs) is based on an examination of the reports of 20 ELIR reviews, conducted during the first cycle of ELIR, 2003-07 (see below Annex 1). It draws primarily on the evidence compiled from the sections on the student experience, and the effectiveness of the institution's strategy for quality enhancement, together with the final summary. Early draft versions were circulated for comment to members of the Scottish Higher Education Enhancement Committee, the QAA Scotland Committee, and to QAA Scotland, all of which groups provided valuable and constructive feedback.

While each ELIR report covers broadly the same aspects of provision, it represents the outcome of an engagement with the institution, which will necessarily address the institution's own state of evolution and particular strategic priorities to promote enhancement, with differing emphases from one institution to another. This overview is a synthesis of information drawn from ELIR reports from the first cycle, not a snapshot at a single point in time. Its primary purpose is to illustrate developments across the sector over the last five years. QAA Scotland is conscious of the ongoing evolution and development of institutional approaches to enhancement, particularly in institutions which were reviewed early in the cycle, as well as the importance of institutional context. Consequently, the particular examples of practice cited here have not been

[1] *Learning to improve: quality approaches for lifelong learning*, Lawrence Howells, Scottish Executive, Edinburgh 2005.

attributed to institutions, but are offered as a stimulus to reflection and further development, rather than as exemplars of good practice in themselves. However, QAA Scotland will be pleased to facilitate enquiries relating to specific examples, by referring them to the relevant institution. Please contact t.barron@qaa.ac.uk

Executive summary

The 21 ELIR reports published between March 2004 and May 2007 show that within the Scottish higher education sector the shift in emphasis towards a more learner-centred approach has to a large extent coincided with developments in information and communication technologies (ICT), including, in particular, the widespread implementation of VLEs. Integrated communication and information systems and VLE-based learning technologies have come to be seen as key elements contributing to the development of a culture of effective student learning in which e-learning is a core component. In taking forward the strategic development of e-learning and blended learning, institutions are facing numerous challenges in terms of the management of change, the coordination of different strategies, the measurement and monitoring of progress, the provision of appropriate staff development and training, as well as the provision of resources and support for new initiatives. But within institutions, the very considerable impact of ICT on the continuing development of an inclusive and supportive student learning experience is not in doubt.

General conclusions

From the evidence of the first cycle of ELIR, the following general conclusions emerge.

- VLEs are in operation at almost all institutions in the Scottish higher education sector, and are playing a key role in supporting the development of e-learning and blended learning for all students, as demonstrated by a wide range of innovative applications, and, more particularly, the development of distributed and distance learning.
- VLEs also afford a platform for promoting student engagement with quality assurance and enhancement through online questionnaires for student feedback and improved channels of communication between student representatives, their constituencies, and student associations.
- In a majority of institutions, library and information systems and technology support have been brought together in a single directorate, which plays a key role in supporting learners.
- The focus on improving the student learning experience facilitates the more integrated approach to ICT strategies, by encompassing the range of administrative and support services, as well as learning and teaching.
- Portal systems linking staff and students to institutional records have become a powerful force in the development of independent learning, and are being further developed in some institutions to support personal development planning and enable feedback on assessment.

- Small specialist teams combining pedagogical and technical expertise are supporting curricular developments in many institutions.
- Almost half the institutions are reported to have undertaken significant refurbishment of the physical learning environment to develop more flexible and accessible space, better suited to student needs and expectations and changing approaches to learning and teaching.

Future development and enhancement of approaches to ICT

Collectively, the ELIR reports identify a number of aspects where good progress has been made and where a continuing focus would serve to strengthen further the impact of ICT on the student learning experience. Evidence from the annual discussions with QAA Scotland confirms that individual institutions are addressing a range of issues as part of their follow-up response to the ELIR. In the wider context, the identification of these more challenging aspects of managing the implementation and development of ICT will inform the ongoing development of cross-sector strategic support for the embedding of enhancement by the partners in the QEF. The areas identified in ELIR for further and ongoing development fall into the following broad areas.

Strategic management and implementation of e-learning

- Defining aims and objectives and formulating clear definitions of e-learning and blended learning to inform learning and teaching strategies and focus staff development.
- Coordinating strategic implementation of institution-wide initiatives to avoid inconsistency and variability in implementation by schools and departments, ensure equality of learning opportunities for students, and enable effective measurement of impact and progress.
- Considering targets for adoption of VLE at programme and module/course level to promote a more even transition.
- Developing evaluation frameworks to measure effectiveness of projects and initiatives.
- Taking due cognisance of implications of e-learning and blended learning for staff development and training, being realistic about the front-end demands of VLE-based approaches on staff time and on the nature and extent of staff input required by such approaches.

The student learning experience

- Ensuring provision of comparable IT support and services for students based away from the main campus, on multiple and geographically distant campuses, or as distance learners.
- Managing risk to the student experience associated with innovation, particularly when unplanned difficulties arise.
- Involving student associations in planning and consultation on institutional developments relating to e-learning and blended learning.
- Continuing to develop portal systems to support personal development planning and enable feedback on assessment.
- Continuing to develop approaches to collection of, and reporting on, student feedback, through a range of ICT media, including VLEs.
- Continuing to develop the learning environment to incorporate flexible learning spaces, to accommodate changing student learning needs and expectations.

Introduction

1 The aim of this report is to provide a general overview of the impact of ICTs (including VLEs) on quality enhancement within the Scottish higher education sector, and how this contributes to improving the student experience. The ELIR reports show that across the Scottish higher education sector institutions are developing a culture of effective student learning in which e-learning is a core component. All but the smallest institutions had VLE systems in place at the time of their ELIR; those which did not have VLEs were planning to install them. The majority of institutions are actively engaged in the development of e-learning, albeit they are at different stages in the process. The reports also show a growing integration between student records systems and other support systems, especially library systems, which has contributed to the development of a more inclusive and supportive learning environment for students, as well as enabling business processes, such as registration, to be conducted more easily and more efficiently online.

2 The following extracts from ELIR reports illustrate the growing impact of ICT on learning and teaching in different institutions over the period of the ELIR cycle. In particular, they show the rapid escalation in the use of VLEs by staff and students, the improved access to information, both general and personal, and to learning resources, within a more flexible, accessible environment and the perceived benefits for the student learning experience.

> 'Originating from experience in the Faculty of Science which has had a VLE in place for some time, the University's Strategic Plan proposed the wider introduction of a VLE. This was implemented from the start of 2004-05 and, in the first year, the VLE has been adopted by almost half the academic community. The University is in the process of developing mechanisms for establishing in-depth information about how it is used in learning and teaching. The University has identified that around 80 per cent of its students have access to a Broadband internet connection and, consequently, have high expectations about the types of material they should be able to access electronically.'

> 'The University considers that the appropriate use of information and communication technology is one of the keys to a modern university education, and the University's Knowledge Management Strategic Plan presents a vision of all courses making an appropriate use of e-learning to enhance the student experience of learning in a research rich environment. According to the associated E-learning strategy, appropriate use of such technologies can enhance the quality of the student learning experience, promote greater and wider access to the University's courses, and improve the effectiveness of teaching. Some element of e-learning is in operation in all 21 schools and is a substantial component of about half the undergraduate courses.'

> 'In the University's own evaluation of the implementation of e-learning, significant increases in the use of the VLE since 2003 can be identified, with some 80 per cent of the student population using it. The student portal to the VLE has been improved, and access and navigation is straightforward. Students appreciate the access to learning materials, as well as the wider range of information on services and events. Overall, the VLE has delivered real benefits for student learning.'

'The University's Teaching and Learning Strategy includes the aim to promote effective use of communication and information technology within teaching, learning and assessment practices. Since 2001, a number of significant steps have been taken to improve information technology facilities, including the enhanced availability of PCs, on-campus wireless communication, wiring all student residences, and the provision of remote access to personal accounts.'

Strategic challenges for institutions

3 The rapid development of e-learning poses challenges for institutions, not only in terms of provision of appropriate support and resource for initiatives, but also in relation to staff development and training in the use of new ICT, particularly their application in learning and teaching. In general, the development of online academic provision is supported by small specialist teams which combine pedagogical and technical expertise, and are located either within information services directorates or within educational development units. These teams support academic staff in developing the use of technology in learning, teaching and assessment, in the use of VLEs and in adapting and developing appropriate learning materials for online and blended learning.

4 The ELIR reports show how the strategic implementation of e-learning requires institutions to define aims and objectives, to formulate clear definitions of e-learning and blended learning, and to consider targets for the adoption of VLEs at programme and module level, in order to promote change effectively. For example, one institution is advised to develop more explicit conceptions of the range of meanings of student-centred and blended learning approaches, to inform learning and teaching strategies and to help focus staff development. Another institution is encouraged to define strategic aims and approaches to blended learning and to further develop their academic planning for the use of the VLE, including the possible introduction of targets for the adoption of the VLE at programme and module level. Linked to the development of blended learning approaches is the need to develop the learning environment to incorporate more flexible learning space, a factor which is clearly recognised by a number of institutions.

5 Institutions can sometimes overlook the wider resource implications associated with the development of e-learning. In two cases, ELIR teams pointed to the wider resource implications for staff development and time, noting that new approaches to teaching, with a learner-centred pedagogy supported by a VLE, may require more staff input in the early years than the institutions have acknowledged in their strategic planning.

6 Portal systems linking staff and students to institutional record systems, are seen by institutions as a powerful force in the development of independent learning. In many institutions, student portals provide personalised online access to data including personal details, teaching and examination information, and assessment results. It is evident from the ELIR reports that these systems are already being developed in some institutions to support personal development planning and to enable feedback on assessment, and that these areas are likely to be the focus of more widespread future development in VLE-based provision within institutions to further promote the development of independent learners.

7 In one notable example, the institution had involved its students to good effect in formulating policy on the introduction of a VLE: 'The Students' Association has also been extensively involved in its introduction, through briefing the student body, and collating their views. The cooperative approach to the VLE project between the University and the Students' Association is seen by both staff and students as important in ensuring the widespread ownership of the VLE project across the University. The VLE is scheduled for implementation during 2006-07' (see paragraph 27).

8 VLEs have a key role, not only as a repository for learning resources, but also in supporting communication between different student groups and partners. For example, well-established VLE systems are providing enhanced communication between student representatives, their wider student constituencies and student associations, playing an important role in supporting and encouraging student engagement in quality assurance and enhancement processes. The evidence indicates that VLE systems are also helping to support peer tutoring and student mentoring schemes.

9 Video-conferencing is clearly an essential facility in the delivery of teaching across multiple sites, particularly when combined with online learning support. For one institution, whose students are geographically disparate, video-conferencing is particularly important, as a supplement to face-to-face teaching. The institution plans to enhance its video-conferencing facilities as part of the wider development of an e-campus environment, which will include social as well as academic communication tools, virtual lecture theatres, virtual field trips and online access to student records. Similarly, in another institution, which at the time of the ELIR was located on three sites, staff highlighted the importance of a reliable information technology (IT) infrastructure and access to a range of online resources and video-conferencing facilities, together with the significance of the VLE in the development of alternative learning strategies.

10 While most institutions have been refurbishing their learning environments to provide more flexible space, better suited to student needs and expectations, one institution, at the time of its ELIR, had advanced plans to move to a new purpose-built campus, which was being carefully designed to take account of the changing approaches to teaching and learning envisaged in the institution's quality enhancement strategy. The team noted that the new campus would be serviced by a managed learning environment, and joint library and IT initiatives, along with multifunctional and flexible spaces, and learnt that these arrangements would facilitate interdisciplinary and mixed-mode teaching.

11 Interestingly, one institution has developed an overarching quality enhancement implementation project, White Space, which aims to include a mixture of pedagogy; new learning spaces; staff development; enterprise and other generic skills; student engagement and research. The institution envisages that this will act as a catalyst for the development of new pedagogies and new curriculum design, and thereby effect a transformational change in learning and teaching, with the ultimate aim of building a 'learning organisation'. However, while White Space was described as a useful 'conceptual framework' for the institution's quality enhancement agenda, the ELIR report noted that the institution had not yet developed an evaluation framework or criteria for its success, which would enable projects and initiatives to be evaluated, and their effectiveness measured.

12 Also highlighted in the ELIR reports is the need for institutions with multiple campuses to provide comparable support services to students based away from the main campus. The strategic plan of one such institution states,'[the institution] needs to provide services, including IT and library services, that are appropriate to "a modern university" and which support students equitably across a variety of contexts'.

Management of integrated information systems

13 The need for more integration between library and information services and technology support has occasioned significant changes in approach to the management of these services. The ELIR reports show that in a majority of institutions, they have been brought together in a single directorate, which plays a key role in supporting learners, particularly in light of the widespread integration of student record and support systems. Highlighting the integrated approach to student academic support, one ELIR report notes, 'Information Services (IS) provides core academic support for the University's students through an integrated approach to the provision of a range of services: library services; IT services (including special support for students with disabilities); learning space facilities; e-learning support; support and training in the use of IT; electronic information resources; and other library material'. In some institutions, information services directorates also include specialist teams, combining pedagogical and technical expertise, to support academic staff in the development of learning materials for online and blended learning.

14 Where ELIR reports make detailed reference to them, it is clear that institutions' ICT strategies reflect this more integrated approach that encompasses administrative, information and support services as well as learning and teaching. They variously include the development of new learning technologies in delivering the curriculum; the introduction of VLEs; strategic use of portals to provide personalised online access to personal data; the development of e-learning and blended learning to enhance the student learning experience, encourage more student-centred approaches, and improve effectiveness and efficiency of provision; promotion of effective use of ICT within teaching, learning and assessment practices.

15 The reconfiguration of support has enabled institutions to take a more integrated approach to strategies. The focus on improving the student learning experience facilitates cross-reference between overarching quality enhancement strategies and autonomous strategies or initiatives relating to e-learning, which allows specific technological needs to be more effectively highlighted. In this way, quality enhancement strategies can drive strategic development more effectively, particularly when effective monitoring and evaluation is incorporated in the process.

16 Strategies for ICT, particularly in smaller institutions, tend to build on innovative developments within particular subject areas or levels of provision. For example, building on the online delivery of a new undergraduate degree in medicine, one institution, was reported to be 'on an upward trajectory of expansion of VLE based provision'. Similarly, another ELIR report describes how the institution's strategy for the use of new technology and flexible learning concentrated initially on postgraduate distance-learning provision. This approach is reported to have been effective in

supporting distinctive programmes which enabled students at a distance to benefit from the institution's cutting-edge knowledge base. The institution is now extending the use of new technology, in particular, the VLE, into its undergraduate provision.

17 The ELIR reports also provide an insight into the emerging strategic links between integrated record systems (for example student record systems, library systems and academic support systems) and new initiatives such as personal development planning. This is exemplified by a project initiated by one of the largest institutions, with the strategic aim of improving the quality, value and accessibility of student data in order that better informed decisions can be made, both about individuals and about the success of programmes and initiatives. The project includes a strategic review to eliminate unnecessary tasks, reduce delays and find faster ways of working, in order to ensure that key processes get easier, faster and simpler for staff and students to accomplish, leaving more time for academic activities. The institution considered that it needed to focus on improving the efficiency and effectiveness of its student-related business processes, in order to free up the time of academic advisers for the future implementation of personal development planning.

18 Another ELIR report describes how the adoption of absence management software has enhanced academic student support: 'Absence management, identified as a key element in the framework for student support, has been made more efficient by the development of the Keeping Every Lecturer Properly Informed Electronically (KELPIE) software that displays absence data and other information about students, including special needs, on-line for academic staff'. The ELIR team considered there would be benefit in the institution encouraging the dissemination of the innovative software tool, both within the institution, and beyond.

Virtual learning environments

19 The Joint Information Systems Committee (the body responsible for the promotion of ICT in education and research in the UK) defines a VLE as an electronic system 'that provides online interactions of various kinds which can take place between learners and tutors, including on-line learning' [www.jisc.ac.uk]. The same source notes the main functions of a VLE as follows:

- 'Controlled access to a curriculum that has been mapped to elements (or "chunks") that can be separately assessed or recorded
- Tracking of student activity and achievement against these elements to allow tutors to set up a course with materials and activities to direct, guide and monitor learner progress
- Support of online learning, including access to learning resources, assessment and guidance. The learning resources may be self-developed, professionally authored or purchased materials
- Communication between the learner, the tutor and other specialists to provide support and feedback to learners, as well as peer-group communications that build a sense of group identity and community of interest
- Links to other administrative systems, both in-house and externally.'

While this definition does not include all forms of e-learning, it does broadly reflect the range of VLE-based activities which are mentioned in the ELIR reports.

20 Most institutions, at the time of their ELIR, were developing VLE-based approaches to learning and teaching. These developments range from VLEs being used mainly as a repository for resources for students, for example for lecture notes and presentations, to more interactive forms of pedagogy, such as discussion groups and self-assessment activities. At least 16 case studies submitted by 13 institutions were directly or indirectly related to the development of VLE-based approaches to learning and teaching, which in itself illustrates the impact VLEs are having on the development of e-learning and blended learning. At the time of their ELIR, two of the three small specialist institutions did not yet have a VLE in place, but were taking forward plans to install one. Midway through the ELIR cycle, an evaluation of the use of the virtual learning environment in higher education across Scotland was undertaken, as one of the six development projects supported by the 'Flexible Delivery' enhancement theme.[2] The findings of the ELIR reports are consonant with the findings of this survey.

21 The majority of institutions are using commercial VLE systems. In one case, where a VLE platform was developed in-house, before a range of commercial VLE products became available within the UK, the institution now recognises that 'concerns regarding the stability of its current VLE mean that it no longer provides a consistently reliable facility for students (including distance-learning students). Accordingly, the University is in the process of migrating its "Virtual Campus" to a new open-source system, and is currently piloting this new VLE in schools across the three faculties. After evaluating these pilots, the University plans to train staff in its use during 2007-08, with a view to introducing the new VLE in the same academic session. The University believes that the new VLE will be a particular enhancement in the delivery of distance and blended learning courses...'.

22 For some institutions, the VLE supports strategic goals to increase distance-learning and part-time provision, while additionally providing greater flexibility for full-time students. In other cases, the VLE underpins wider strategies for institutional development, as for example, where one new institution envisaged that the planned increase in learner-centred approaches would reduce staff/student contact hours, thus facilitating an increased focus on ambitious research targets. In this instance, it is important to note that staff expressed mixed views about whether increased use of the communications features, such as allowing student discussions within the VLE, would actually save time, or would demand a different type of staff input.

23 The importance of coordinated institution-wide approaches to the development of e-learning is highlighted in two examples. First, one large ancient university is reported to have identified a risk that uncoordinated individual developments, such as

[2] *'An evaluation of the use of the virtual learning environment in higher education across Scotland'*, Professor Geoffrey Ward, QAA 2006. This represents the outcomes of a survey of Scottish higher education institutions in 2005-06, with the aim of identifying patterns of VLE use, and common experiences, developing an overview of this aspect of flexible delivery in the Scottish higher education context, as a benchmark for individual users, teachers, managers and other stakeholders, and contributing to the sum of knowledge and best practice in VLE development in the Scottish higher education sector, identifying norms and trends and, where possible, to inform future investment in learning technology.

the proliferation of local learning environments, might not bring to it the full benefits of innovation, which led it to commission a report from the Observatory on Borderless Higher Education on e-learning. The ELIR report takes the commissioning of the report itself to be an indicator of the University's awareness of the benefit of taking a university-level coordinated view of new approaches to teaching and learning. In general, in the very few cases where ELIR teams learnt of a variety of VLE platforms in operation, they supported existing senior management plans to focus on a single, institution-wide platform. Second, one large civic institution, whose case study for ELIR detailed the introduction of central support for faculty-led, blended learning, and focused on the recent and rapid development of e-learning within the institution, is noted for the integrated strategic approach across the institution: 'In line with The Vision statement and e-learning strategy, this had been a whole institution development, requiring considerable integration and collaboration across academic, support and technical services'.

24 In institutions where the VLE is well embedded, the ELIR reports provide evidence of highly productive and creative collaborations between learning technology units and academic staff, which represent significant developments in e-learning. For example, at one institution, over 100 collaborative e-learning projects are said to have been realised. The ELIR report notes, 'In particular, highly productive and creative collaborations with academic staff from each of the three colleges have created innovative and ambitious new learning opportunities for students, such as the virtual field trip (College of Physical Sciences), the virtual laboratory (College of Life Sciences and Medicine) and the virtual museum (College of Arts and Social Sciences). All these projects have been evaluated and have received positive student feedback'. Similarly, the ELIR report for another institution notes the creation of a virtual farm for the vet school, and yet another institution highlighted in one of its case studies the development of a virtual town as a learning tool for a range of disciplines.

25 The ELIR reports also demonstrate the various ways in which the strategic development of VLEs is enhancing the student experience, including learning resources, learning support, online assessment, electronic personal development planning, student surveys delivered online and communication between individual students, student peer groups, mentors and student representatives. Student portals enable students to access course-related material, and a wide range of information and guidance. In some institutions, the VLE is also facilitating student engagement with quality assurance and enhancement by providing a communication channel between student representatives, their constituent students and the student association. For institutions with multiple campuses, the VLE is seen as important in improving efficiency and dealing with the complex delivery of programmes over more than one campus. However, one ELIR report noted that the provision of IT support on multiple and geographically distant campuses can be uneven: 'The University recognises that on the [named] campuses, the levels of information services available locally, in terms of IT support, are more limited, and that further development would be of benefit'.

26 In one of the largest institutions, over a thousand courses are reported to be active in using the VLE, which is linked directly to the library's online catalogue. Launched in 2004, this portal provides staff, students and alumni with a personalised

gateway to access features such as programme and course information, examination results, library access and other general services. The ELIR report observes:

> 'The success of the portal is indicated by the fact that 90 per cent of students (approximately 23,000) have registered to use it, with 70 per cent logging on at least once a month. The University considers it has expended substantial effort in developing and operating this technology to ensure that it provides a consistent quality of service and gives students the quality of experience they expect.'

27 A smaller institution with significant collaborative provision, and a high proportion of distance or distributed learning students, is reported to be in the process of developing a university-wide VLE, building on an established history of e-learning and blended learning innovations within the institution. The report highlighted the impact on the student experience: 'The University VLE is intended to benefit both on and off-campus students and aims to provide the learner with a flexible and accessible environment which supports student-centred, resource-based learning and personal development planning'. The institution's staff view the introduction of the VLE as a particularly positive example of institutional strategy building on expertise and good practice from within the schools, while the Students' Association has also been extensively involved in its introduction, by briefing the student body, and collating their views. The ELIR report notes, 'The cooperative approach to the VLE project between the University and the Students' Association is seen by both staff and students as important in ensuring the widespread ownership pf the VLE project across the University. The VLE is scheduled for implementation during 2006-07'.

28 In another medium-sized institution, institutional strategy is seen to build on local expertise and good practice:

> 'The VLE is cited as the best example of good practice being supported centrally, in this case by [the centre for learning and teaching]. Good practice that becomes policy might be disseminated across the University, but its adoption may still depend upon the inclinations of schools or even individuals…In relation to the VLE, although the promotion of e-learning is part of [the Quality Enhancement Strategy] and its use has grown to 350 modules in the four years since its introduction, greater consistency of uptake across schools would enhance the learning experience more equitably.'

29 One issue identified in at least four ELIR reports is variability in usage of the VLE between modules. Thus, for example:

> 'Some students indicated that the variability of its usage between modules could at times pose a problem as they were not always certain how much they were expected to make use of it from module to module. The University has recognised this issue, associated with the rapid uptake in usage of the VLE, and has measures in place to address this. Through the [centre for teaching and learning], an e-learning practitioners' network has been established and a range of workshops is being offered for staff to further develop e-learning pedagogy.'

30 As stated in paragraph 20 above, at the time of their ELIR, two of the small specialist institutions did not have a VLE in place. In the first case, the institution

acknowledged the current lack of a managed learning environment as a limitation, and had included the introduction of a VLE as a strategic objective, not least because it was already delivering a distance-learning programme that was predicated upon the existence of a VLE (see paragraph 33 below). In the second case, the institution was already considering the desirability and form of a VLE in its special context, having already made significant investment in ICT provision, and being keen to exploit the potential of ICT as an aid to both learning and teaching.

31 The ELIR reports indicate that occasionally there is a tension between institutional aspiration and the front-end demands of supporting a learner-centred approach, through a VLE (see paragraph 34 below). While the benefits to students are clear, it is by no means clear that there is any overall reduction in staff input. A realistic interpretation would be that VLE-based provision does not save staff time, but rather requires a different type of input, which is likely to be more intensive when systems are under development. Institutions therefore need to cautious about assuming that VLE-based approaches can deliver a refocusing of staff time.

32 Two ELIR reports focus particularly on the importance of managing the risk to the student experience when VLE-based provision is under development. The first case highlights problems arising from technical difficulties in implementation, and the second highlights the tensions which can arise between different institutional strategies.

33 The first case involves the introduction of an honours programme involving a distance learning element, and which was intended to be delivered via a VLE. When the original choice of VLE proved problematic, it was discontinued. The institution then experienced difficulty in locating and introducing a suitable VLE, which meant that the programme started without a VLE to support it. While the introduction of a new system was being investigated, communications were maintained using email. Although the students expressed satisfaction with this, the ELIR team did not consider it a substitute for a VLE. Recognising the programme as an innovative and interesting initiative, the ELIR team nevertheless questioned the decision to launch the degree when a key means of delivering it had not been tried or tested. They advised the institution 'to pay very careful attention to the development of the programme because it may become more difficult, as the students progress to more advanced study, to ensure parity of academic standards and student experience with full-time programmes'.

34 The second case concerns an institution's planned increase in learner-centred approaches, in the context of a strategic plan which envisages significant and rapid increases in staff/student ratios, and reductions in staff-student contact hours in order to facilitate a developing focus on research. However, the majority of staff were reported as recognising major challenges and concerns in this agenda, not least because of the front-end demands arising from the development and implementation of VLE-based approaches to learning. There were mixed views as to whether these would save staff time, or demand a different kind of staff input, and whether team teaching, which was valued by students and staff, might be in jeopardy due to increased pressure on staff time. The ELIR team 'formed a view that the [institution] might see advantage in considering how it might be more active in managing the potential risks to the student experience associated with the planned rapid expansion

of student-centred learning approaches and the developing use of a VLE. In doing so, it might usefully include consideration of the likely need to invest additional staff time in the development of resources for the VLE, and the staff time necessary to support and facilitate learner-centred methodologies'.

35 The ELIR reports show that students are generally well satisfied with and enthusiastic about VLE-based provision, with the caveat in several cases that the provision was variable and inconsistent, or that it cannot always be assumed that students have internet access at home.

36 A number of reports illustrate the general enthusiasm of students, as follows.

> 'Students value the ready access to support materials on the intranet for some of their courses and expressed a desire to see this made more widely available. Part-time students indicated they could access the VLE remotely, which they regarded as a very useful support tool.'

> 'In discussions, students commented positively about the ease with which programme information could be obtained, but pointed out that because not all students have internet access at home, some would have to come in to the University to log on. Nonetheless, students were enthusiastic about the facility afforded by the Portal to access lecture notes and to work flexibly.'

> 'In discussion with the ELIR team, students were enthusiastic about the usefulness of the VLE and the training that they had received on its use. All new undergraduates undertake a compulsory induction session on information technology (IT) which, some students found, included little that was new to them, although they confirmed it was well delivered and generally useful.'

37 In other cases the students' enthusiasm is tempered by their perceptions of variability in the scale and quality of provision, as the following extracts show.

> 'Students confirmed inconsistencies in the use of VLE but were enthusiastic about e-learning where it was well developed…Students, in discussions during ELIR, however, perceive that the use of the VLE in their programmes of study is variable both in scale and quality.'

> 'Undergraduate students welcomed the development of the VLE and supported its wider use in a blended learning environment. Some students indicated that the variability of its usage between modules could at times pose a problem as they were not always certain how much they were expected to make use of it from module to module.'

> 'In discussion students commented that they had no difficulties accessing the VLE and effective guidance and technical support is provided, on-line and from lecturers and IT staff. Students reported some concerns about the differences in use of the VLE by staff, including apparently different approaches on different campuses.'

Applications of e-learning

38 The ELIR reports highlight a number of innovative applications of e-learning, including some award-winning subject based simulations, as well as broader applications, for example to develop e-portfolios in support of personal development planning; to evaluate peer tutoring; to support engagement of first-year students; to support the use of personal response systems to encourage interaction in lectures; to develop online induction; to equip students with laptops; and more strategic initiatives to utilise flexible provision to develop distance-learning programmes; to provide access to cutting-edge knowledge in response to market and employer demand. In addition, although to a lesser extent, the ELIR reports indicate progress in some institutions in the use of online assessment.

39 At least five ELIR reports indicate the existence of institutional seed corn funding for innovative projects in teaching, learning and assessment, or more specifically, in e-learning. The following two detailed examples are illustrative. In one large new university, the centre for learning and teaching is allocated £20,000 a year to fund a scheme for innovative projects in teaching, learning or assessment or the wider student experience, proposed either by individuals or by small groups of staff. Recent examples of projects funded through the scheme included the application of personal response systems to encourage interaction on lectures and the development of an e-portfolio tool. In a large ancient university, a Principal's e-learning fund was established in 2003 with a total budget of £2.2 million, to be allocated over the period 2003 to 2008. At the time of the ELIR, over 40 projects had been funded. Two of the case studies presented by the institution for the ELIR, 'Physics 1A Foundations' and 'The Virtual Farm', illustrated the ways in which the use of IT can enhance the delivery of programmes and improve student performance by accommodating different approaches to learning.

40 Academic staff in one institution have engaged in highly productive and creative collaborations with the learning technology unit to produce (inter alia) a range of simulation tools: a virtual field trip, a virtual laboratory and a virtual museum. The ELIR report notes that the award-winning Joint Information Systems Committee-funded LEMUR (Learning with Museum Resources) Project enables students to browse and retrieve images and information from a database produced from the University archives, and that all these projects have been evaluated and have received positive student feedback. Simulations in operation elsewhere include a 'Virtual Farm', developed for the veterinary students, and a virtual town, developed for a range of disciplines, including law.

41 One very successful and established innovation described in an early ELIR report was the laptop initiative, which is particularly interesting when compared with the comments of one student group on their lack of internet access at home (see paragraph 36 above). 'In discussion, students praised the University's laptop initiative through which they can borrow or purchase specially configured laptops providing access to a range of learning materials. Some of the students had experience of studying on-line and emphasised the benefits of being able to interact with their peers or tutors at times when they would not be able physically to attend the University'. Senior staff were reported to be aware of the potential disadvantages

associated with over-emphasis on ICT, such as the students becoming isolated. Indeed, the institution had identified the importance of achieving a balance between enabling individual, remote access to an electronic learning environment and providing opportunities for students to mix with their peers and staff.

42 One of the later ELIR reports describes the development of 'Project X modules', which aim to raise students' aspirations and build on interdisciplinary research using interactive tutorial sessions and problem-based learning, and which form part of an overarching quality enhancement implementation project, White Space (paragraph 11). The Project X modules were submitted as a case study for ELIR.

43 The ELIR reports confirm that most institutions have been reviewing their approaches to induction. In particular, one new institution is reported to be planning the design and creation of an online induction site, which would make a consistent set of information available to all its geographically disparate students, with the emphasis on longitudinal induction rather than a one-off event. The ELIR report notes that 'A pilot of the online induction is being planned for 2007-08, when material will be available on a range of topics including facilities and resources, study skills, referencing and academic regulations. It is intended that further materials, such as information for students with disabilities and specific information relating to academic partners and individual programmes will be added subsequently'. The institution's intention is that online induction materials will complement, but not replace, traditional induction which is offered locally, but hopes that the availability of material online will enable more time to be devoted to social activity during the traditional induction period.

44 The ELIR reports are somewhat reticent on the subject of online assessment, but there are at least two examples which indicate rapid development in this area, combined with the use of laptops and ICT equipment in traditional examinations. In the first example, the ELIR report attests to the significant development in the use of online assessment for both formative and summative assessment using proprietary assessment management software. Here, an IT suite has been designed to accommodate whole classes of students who can undertake online assessment at the same time and programmes have been quick to take advantage of this institutional development, with significant numbers of assessments being undertaken. The ELIR report comments 'The University has identified considerable diversity in assessment policy and practice across the faculties, and is considering developing an institution-wide policy and rationale for practice in this area. In doing so, the University should consider the role of on-line assessment as there is a potential danger that the attraction of its efficiency may reduce the range of strategies used and, in turn, reduce the opportunities students have to demonstrate their knowledge and skills'. In the second example, the institution is reported to have provided information to a Higher Education Academy project to explore the use of laptops and other ICT equipment in traditional examinations. This has led to a series of other projects, including modifying one of the institution's key examination venues to provide a wireless network, and exploring the use of electronic portfolios as assessment tools to encourage students to take a more reflective and holistic view of their work.

45 Overall, the ELIR reports do not provide complete or very detailed information about the use of assistive technologies to support students with disabilities. The absence of comment would suggest that provision is generally well established and meeting legislative and other external requirements, including those of the *Code of practice for the assurance of academic quality and standards in higher education*, published by QAA. One ELIR report highlights the institution's receipt of a Best Practice award from the University Colleges and Information Systems Association for their support for students with disabilities. The model of provision in this case is based on a partnership approach between information services, student support services and academic staff, with a view to providing an integrated approach to all IT facilities, alongside the provision of the 'Accessible Curriculum' (to support academic staff)and 'Learning Methodologies' (assistive technology for students). In two other cases, the ELIR reports indicate a strengthening of provision, where no dedicated administrative support has existed hitherto. In the first case, the institution has agreed to fund a temporary post of assistive technology adviser, whose role is to assess the technological requirements of individual disabled students; to make recommendations as part of a Disabled Student's Allowance application; to assist students with the purchase and set up of specialist equipment; and to provide training on, and to initiate improvements to, the provision of assistive technology in university computer classrooms. In the second case, a new institution has recently appointed a part-time student disabilities coordinator, to provide a focus for the coordination and development of information and support across the institution.

Personal development planning

46 The evidence of the ELIR reports indicates the widespread use of online resources to support the implementation of personal development planning, for example through localised pilots and parallel initiatives to develop e-portfolios. Such approaches are well received by students. In one such case, where a particular subject area is piloting the development of e-based personal development planning, using an e-portfolio approach, the ELIR report notes that 'According to the University, initial feedback from students is positive and they are largely supportive of the concept of PDP and have recognised the advantages of using an electronic-based framework to aid their reflection'.

47 Lack of coherence in the implementation of e-personal development planning is a common critical comment in the ELIR reports, particularly where progress towards an institution-wide arrangement has been slow. In these circumstances, it appears that the central development of e-portfolios can at least facilitate progress towards implementation of an institution-wide approach. So, for example, one institution, which at the time of its ELIR was lead partner in a Scottish Funding Council funded e-learning transformation project - Individualised Support for Learners through ePortfolios (ISLE) - viewed this as 'significant in informing its personal development planning pilots and in bringing coherence to PDP across the institution'. To this end, information relating to these ongoing developments was included in the institution's annual monitoring documents. However, in a second institution, also involved in the ISLE project, where e-PDP was rolled out to all first-year students in September 2006, the implementation suffered from lack of coherence, thus making it difficult to

measure impact and progress. The ELIR report pointed to considerable variation in the mechanisms for implementing e-personal development planning across and within schools, observing that 'In some cases academic tutors use e-personal development planning to form a basis for discussions with their students, while in others it is built into specific modules… . It is likely that variability of practice will make it difficult for the University to determine the impact of PDP on other institutional priorities, such as employability or student retention', and advised the institution to 'give consideration to its implementation of PDP and, in doing so, [to] reflect on the equality of the learning opportunities offered to students'.

Online student feedback

48 The limited evidence of the ELIR reports suggests some variation in the extent to which online student feedback questionnaires are used, both within and between institutions, but is not conclusive. Where feedback mechanisms are discussed in any detail, it would appear that the VLE has tended to be used more for institution-wide thematic student surveys on the student experience in general or particular aspects of it, and that the experience of departments/schools in using electronic questionnaires for course/module evaluation has been more mixed. However, it is also clear that some very successful approaches to the collection of online feedback have been developed within schools/departments engaged in distance and distributed provision, which are in turn being disseminated as good practice more widely within their institutions. By the end of the ELIR cycle, at least one institution is reported to have undertaken a review of its approach to student questionnaires, leading to the development of an electronic platform for questionnaire delivery, analysis and feedback to students.

49 At least two ELIR reports record the institutions' own observations that electronic feedback questionnaires tend to elicit low response rates, but one of these makes a distinction between questionnaires in electronic format and VLE-based questionnaires.

> 'Several schools that use on-line questionnaires have observed in their annual reports that electronic questionnaires tend to lead to low response rates.'
>
> 'The University regards as strength the levels of student satisfaction expressed through its module evaluations, although it is recognised that response rates via electronic questionnaires have been disappointing. The University is confident that there will be greater student engagement with this when the questionnaire is made available on the University VLE from 2005-06.'

50 In one institution reviewed at the end of the cycle, the development of an electronic platform for questionnaire delivery, analysis and feedback to students is seen to have delivered greater efficiency in processing feedback, among other benefits, and student response rates have risen significantly since the introduction of the revised questionnaires. The ELIR report cites a further example of good practice which relates to the collection of feedback from independent distance learners, where the institution's Business School is reported to have well developed systems for the collection of feedback through an online message board system.

51 Combined with the migration of questionnaires to an electronic platform, a further development in this institution, which appears to have helped to improve response rates, and generated more useful feedback, is the use of targeted questionnaires. The ELIR report observed, 'In particular, the targeting of students has been introduced, so that undergraduates now receive University-wide questionnaires in their first and final years only in order to concentrate, respectively, on student transition to University, and students' experiences over their entire learning period'.

52 A few ELIR reports point to institutional deficiencies in 'closing the loop' in reporting the outcomes of surveys, the analysis of student course questionnaires, or the impact of feedback on provision or the outcomes of internal subject reviews. In one case, as a possible mechanism for addressing this, the institution highlighted the planned linkage of the database of student representatives to the University's VLE to facilitate communication with and between student representatives, and between student representatives and their constituencies. The ELIR team suggested there may be benefit in the institution reflecting on the diverse range of tools that can be used to gather, and respond to, student feedback rather than relying on electronic mechanisms which may have poor response rates. At least one other ELIR report noted that, despite the efforts of the institution to post statistical results of module and course evaluation questionnaires on the student portal, and the outcomes of meetings with students on a dedicated student website, the ELIR students reported that they did not make wide use of the virtual campus to learn what improvements the University was making. In this instance, the institution is reported to be 'actively seeking to enhance its feedback to students, for example through the use of posters and plasma screens, recognising that on-line feedback is not currently proving fully effective in ensuring wider student awareness of the University's response to issues raised by students'.

Learning environments and flexible learning spaces

53 Almost half the ELIR reports contain evidence of significant refurbishment and development of the learning environment to create flexible learning spaces, to accommodate changing student learning needs, as e-learning and blended learning become more prevalent. The following examples illustrate the integration of ICT into teaching and learning space.

> 'The rolling programme of improvements to the learning environment includes the refurbishment of the teaching laboratories in one school, highlighted by the University as a case study of how major investment in physical infrastructure can be used to improve teaching and learning. These spaces successfully integrate communication and information technology into practical laboratory teaching, with innovative layout and design of collaborative work stations. The University's approach to the improvement of its estate is having a considerable positive influence on the development of the learning environment for students.'

> 'Study space and computing facilities are available on all the University's sites, with a wireless network operating on some… . The University is reviewing its teaching and learning spaces as part of the ongoing effort to blend traditional and what it describes as 'digital' education methods. Refurbishment of the main library is part

of this process, and an institution-wide seminar on innovation in learning spaces was scheduled for autumn 2006, in which students would play a key part.'

'The [name] Centre, which will open in early 2006, is the most ambitious of the recent initiatives overseen by Learning Services intended to promote effective student learning. At the time of the current ELIR, the [name] Centre was at an advanced stage of preparation. The [name] Centre builds on the success of an earlier University project, the Learning Café, which promoted the educational philosophy of social learning based on conversation and the use of technology. The [name] Centre is a further development of this approach to innovative learning space and will double the space available for learners, provide a variety of study spaces and support a wide range of different styles of learning, from silent study areas to a 600-seat café-style space for group, project and team work.'

'Recent changes to the learning environment include the successful refurbishment of former engineering laboratories to house White Space activities. The Student Centre, officially opened at the start of 2005-06, offers attractive social, recreational and cultural space which is enthusiastically welcomed by staff and students who consider that it is encouraging students to participate in University activities and may, therefore, contribute to student retention.'

54 The following examples focus on the institutional mechanisms for planning and implementation of improvements to teaching and learning spaces.

'The University's Teaching Infrastructure Group oversees the planning of improvements to the quality of the learning and teaching environment. This includes the phased refurbishment of lecture theatres, seminar rooms and teaching laboratories… . New buildings with modern learning and teaching facilities for Business Studies, Computer Science and Arts have been or are being acquired. Further changes and improvements to the central learning environment are planned as the University progresses its IT strategy and takes steps to develop the library.'

'The strategic development of the University's learning spaces is overseen by the Learning Spaces Group (LSG), which reports to the Quality Enhancement Committee… . To date the LSG has been effective in the establishment of refurbished learning spaces in the University's [name] Building, and in the design development of the [name] Resources Centre. The benefits of these improvements have included more student study spaces and improved levels of information technology for teaching. The LSG has made a positive contribution to the links between student learning needs and the physical refurbishment of the University's estate.'

Conclusion

55 The ELIR reports confirm that ICTs, including VLEs are having a pronounced impact on the student learning experience across the Scottish higher education sector, as the development of e-learning and blended learning progresses within institutions. The challenges involved are not inconsiderable, in terms of strategic management, staff development, oversight of the impact on the student learning experience and funding for ongoing developments. However, the widespread introduction of VLEs has led to considerable enhancements in learning and teaching, increased efficiency and effectiveness in a range of business processes and services, and improved access to programme and course information, support materials and personal data, including examination results. These developments are enthusiastically received and valued by students. Moreover, the focus on the student learning experience facilitates the integrated approach to ICT strategies, encompassing the range of administrative and support services, as well as learning and teaching. In addition, developments in ICT have been accompanied in some institutions by refurbishment of the physical learning environment to create more flexible learning spaces, suited to current student needs and expectations. Future enhancements in ICT provision are likely to focus on the support of personal development planning and online assessment, further reinforcing the development of the independent learner.

Annex 1

This interim report draws on the evidence of the following ELIR reports:

Bell College of Technology, Hamilton *	January 2004
The Royal Scottish Academy of Music and Drama, Glasgow	March 2004
University of Glasgow	April 2004
Queen Margaret University College**	May 2004
University of Dundee	November 2004
The Glasgow School of Art	February 2005
Edinburgh College of Art	March 2005
University of Strathclyde	April 2005
University of Aberdeen	April 2005
The Scottish Agricultural College	May 2005
Bell College of Technology, Hamilton (Follow-up review)*	November 2005
Glasgow Caledonian University	December 2005
Heriot-Watt University	February 2006
University of St Andrews	March 2006
Napier University, Edinburgh	April 2006
University of Paisley *	April 2006
University of Edinburgh	November 2006
University of Stirling	November 2006
University of Abertay Dundee	May 2007
The Robert Gordon University	May 2007
UHI Millennium Institute	May 2007

Note:
* The University of Paisley and Bell College of Technology, Hamilton have subsequently merged to form the University of the West of Scotland
**Now Queen Margaret University, Edinburgh

Annex 2

Case studies related to e-learning

As part of their preparation for ELIR, each institution was asked to submit, with its reflective analysis, an annex including one or more case studies to illustrate the linkages between the institution's enhancement strategy and its operational management of enhancement. The case study was to outline the good practice itself (which might be generic or subject-related) together with the ways in which the example illustrates the institution's approach to supporting enhancement. Institutions had flexibility in deciding the form of the case study and method of presentation. The purpose of the case studies was principally to inform the discussions during the ELIR visit.

The case studies addressed the enhancement of learning and teaching from a variety of perspectives and at different levels within institutions, ranging from strategic initiatives at institutional level to practice within faculties, schools and departments. Many of the case studies resonated with the sector-wide enhancement themes at the time, including topics such as: wider access; the first-year experience; student transition; student retention; student support; student feedback; student engagement in quality processes; assessment; employability; flexible delivery; e-learning and blended learning. Others addressed mechanisms for quality assurance and enhancement, including institution-led review at the subject level and the development of programme specifications. A third of the case studies related to the strategic implementation, or practical delivery at subject level, of e-learning and blended learning, which was indicative of the widespread impact of developments in information and communication technologies over the period of the ELIR cycle.

By way of illustration, the relevant case studies are listed below.

1 'Virtual Experiences: An Illustration of Successful Collaboration' highlighting three examples of the experimental and productive collaborations between academic staff and the University's Learning Technology Unit to develop e-learning.

2 'Refurbishment of the Zoology Labs G6 and G8: Enhancements to Practical Classes' describing the design and fitting out of laboratories to provide environments with new opportunities for student learning and methods of teaching.

3 'The strategic development of the University's Portal', an institution-wide initiative to create an online community with simplified access to learning resources and other information and providing enhanced opportunities for interaction.

4 'Project X', the development of a new kind of student learning aiming to raise students' aspirations and build on interdisciplinary research using interactive tutorial sessions and problem-based learning.

5 Central support for faculty-led, blended e-learning focusing on the recent and rapid development of e-learning within the University, in the context of The Vision and the University strategy for quality enhancement.

6 Innovative approaches to learning and teaching in an introductory Physics course.

ANNEX - 2

7 The use of IT to provide a 'virtual farm' in support of the University's veterinary students.

8 A virtual classroom - BAccChat - developed in the Department of Accounting and Finance.

9 The University's Student Information Technology (IT) Literacy Programme.

10 Interactive handsets introduced as a teaching aid in the Departments of Computing Science and Psychology and currently being used by eight departments.

11 Sustainable Science Heritage and Development: development of a new model through the revalidation process - setting out the institution's approach to redesigning its programmes in one subject network, utilising blended learning strategies and the revised modular structure.

12 Managing and enhancing the student experience on networked programmes - a description of arrangements for delivering teaching and student support on networked degrees in the Faculty of Arts, Humanities and Social Sciences.

13 Technology supported learning.

14 Enhancing learning through the strategic use of learning technologies.

15 'Flexible Learning', illustrating the importance of flexible learning at the institution, and that '...flexible learning is an essential part of the overall institutional strategy to continue widening access'.

16 Innovative pedagogic developments in the School of Classics illustrating a number of flexible learning initiatives, each led by a member of staff and supported by the University's central learning and teaching unit.

17 E-learning, intended to demonstrate a top-down approach to strategic enhancement, and including an assessment of the implementation of e-learning via the establishment of the University's Centre for e-learning Development.

18 The introduction of a single virtual learning environment focusing on the introduction of Active Learning in the Community modules, and seeking to demonstrate a bottom-up approach, through the University adopting an initiative at the grass-roots level and incorporating this into its developing employability strategy.

19 The University's Learning Spaces Group, including an assessment of the collaborative approach taken to the strategic management of learning spaces, involving students, academic staff and the University's support services.

20 The impact of the University's Teaching and Learning Methodologies Initiative.

21 How the use of virtual learning environment developments in certain areas of the institution has enhanced teaching and learning.

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